

PATENT ABSTRACTS OF JAPAN

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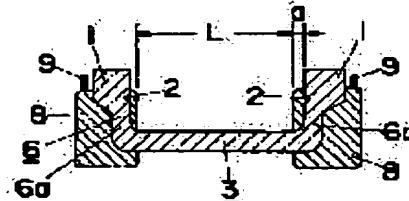
(22)Date of filing : 25.11.1992 (72)Inventor : Hori Masami
Kaji Norikimi
Hashimoto Takeshi

(54) ELECTROMAGNETIC RELAY

(57)Abstract:

PURPOSE: To prevent a flange part, which is formed by simultaneous molding with both side pieces of an iron core of a coil block, from peeling at the time of separating the part from molding dies and provide an electromagnetic relay with improved suction force range.

CONSTITUTION: The cross-section surface area of tip parts 1 of both side pieces 6a, 6a of an iron core 6 of a coil block 3 is made wider than any other cross-section surface areas and a groove 2 with a V cross-section shape is formed in the sides of the tip parts facing each other. A molding material enters the groove 2 when a flange part 8 is formed by simultaneous molding and due to the separation resistance between the flange part 8 and molding dies, the holding force between the flange part 8 and the side piece 6a of the iron core 6 is increased and the flange part 8 is prevented from being separated from the side piece 6a of the iron core 6 at the time of separating the molding dies.



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CLAIMS

[Claim(s)]

[Claim 1] The coil block which formed the flange made of resin by simultaneous shaping in the both-sides piece of a KO character-like iron core, and looped the iron core between flanges around the coil, The permanent magnet which magnetized so that a central polarity might differ from the polarity of ends, and contacted the pole face of the ends of an exposure **** iron core from the end face of both the flanges of a coil block of ends, In the electromagnetic relay equipped with the armature which is supported by the center-section top face of a permanent magnet free [a splash], and carries out seesaw actuation in the direction of ends of a permanent magnet An iron core with the variant cross section which made larger than the cross section of other parts the cross section of the point section of the both-sides piece which includes the pole face as an iron core of the above-mentioned coil block is used. The electromagnetic relay characterized by forming the slot for exfoliation prevention in the opposed face of the both-sides piece which is the point section of the both-sides piece to which this cross section became large, and is laid under the flange, and growing into it.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the electromagnetic relay in which an armature carries out seesaw actuation.

[0002]

[Description of the Prior Art] This electromagnetic relay in which an example of the electromagnetic relay with which an armature carries out seesaw actuation of drawing 6 is shown consists of the box-like base 11 opened up in casing, and covering 12 which is box-like [which was opened caudad] and inserted in in a wrap form in the outside of the side attachment wall of the base 11 from the upper part of the base 11.

[0003] The base 11 consists of resin mold goods, and the hollow 13 opened within and without the upper part and the base 11 in the center section of the longitudinal direction is formed in the both-sides wall of a cross direction, respectively. In the base of each hollow 13, end 21a of the common terminal 21 by which simultaneous

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shaping was carried out is ****(ing) to the base 11. It exposes to the outside of the both-sides wall of the base 11, and the common terminal 21 is making the other end project down the base 11.

[0004] The rib 14 with which an upper bed is caudad located rather than the top face of the base 11 is formed in the four corners inside the base 11, respectively. In the top face of a rib 14, the stationary contact 23 prepared in the base 11 at the upper bed of the stationary-contact terminal 24 by which simultaneous shaping was carried out is ****(ing), it exposes to the outside of the both-sides wall of the base 11, and the stationary-contact terminal 24 is making the other end project down the base 11.

[0005] The notch 15 opened within and without the upper part and the base 11 is formed in the ends wall of the base 11, and end 22a of the coil connection terminal 22 of the couple by which simultaneous shaping was carried out has protruded on the base 11 toward the upper part from the base of each notch 15. It exposes to the outside of the both-sides wall of the base 11, and the coil connection terminal 22 is making the other end project down the base 11.

[0006] In casing formed with the base 11 and covering 12, the coil block 3, the permanent magnet 4, and the armature block 5 are arranged. It is formed in the configuration which the point which the coil block 3 is covered with the flange 8 formed with the insulating synthetic-resin ingredient of simultaneous shaping as the both-sides pieces 6a and 6a of the horseshoe-shaped iron core 6 were shown in drawing 8 while the horizontal piece of the iron core 6 of the abbreviation KO typeface opened up was looped around the coil 7, and constitutes the pole face from one place of the peripheral surface of a flange 8 exposed. The end-winding child 9 connected to the coil 7 is formed one pair corresponding to each flange 8, respectively, and he is bent so that end 22a of the above-mentioned coil connection terminal 22 may be contacted, while he projects more nearly up than the upper bed of a flange 8.

[0007] The coil block 3 is combined in the condition of having been contained in the base 11, electrically [the end-winding child 9 and the coil connection terminal 22 / in approaches, such as welding association or solder association,] and mechanically. Between the pole faces of the ends of an iron core 6, the above-mentioned permanent magnet 4 is arranged in the form which a magnetic pole is made to contact. A permanent magnet 4 is a tabular thing, and to the coil block 3, it is fixed by adhesion etc., and both ends are magnetized by the like pole, respectively and are magnetized by the magnetic pole from which a center section differs. That is, if both ends are N poles, the center section is magnetized so that it may become the south pole.

[0008] The armature block 5 consists of elastic support pieces 18 by which

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simultaneous shaping was carried out at the shaping section 16 by being united in the armature 10 made from the magnetic substance formed in plate-like [of an abbreviation rectangle], the shaping section 16 formed over the cross direction of the center section of the armature 10, the movable contact spring piece 17 arranged so that it may be concurrent on the side face of an armature 10 with this shaping section 16 with simultaneous shaping, and the movable contact spring piece 17.

[0009] Simultaneous shaping of the center section is carried out at the above-mentioned shaping section 16, it consists of long and slender conductive flat spring which extended the other end in the direction of ends of an armature 10, and the movable contact spring piece 17 forms the elastic support piece 18 used as a hinge spring in a center section at one. the other end used as the free end -- a slit 19 -- forming -- two forks -- the stationary contact 23 and the corresponding traveling contact 20 are formed as a **.

[0010] The armature block 5 puts the supporting-point section which the hollow 13 which formed the elastic support piece 18 in the side attachment wall of the base 11 was made to carry out fitting, and welding immobilization was carried out at end 21a of a common terminal 21, and was prepared in the center of an underside free [rotation] on the center-section top face of a permanent magnet 4, is supported free [a splash], and is arranged in the base 11. Covering 12 is inserted in the base 11 where the coil block 3, a permanent magnet 4, and the armature block 5 are contained in the base 11 as mentioned above.

[0011] Since the base to the shaping section 16 of the above-mentioned elastic support piece 18 is deflected from the core of the longitudinal direction of the armature block 5 here, the adsorption power between the armature 10 by the permanent magnet 4 and the pole face of an iron core 6 can be resisted, and the return rotation of the armature block 10 can be made to change into a fixed condition, when the spring force of the elastic support piece 18 makes it larger than the magnetomotive force which makes the armature 10 by the permanent magnet 4 stick to the pole face of an iron core 6. Therefore, the owner pole type electromagnetic relay which carries out monostable actuation consists of examples to illustrate.

[0012] If a coil 7 is excited in the direction which the edge of the deflection of the above-mentioned elastic support piece 18 and the armature 10 of an opposite hand is stabilized where a permanent magnet 4 is adsorbed, and usually negates this adsorption by the above configuration The other end of an armature 10 is attracted by the magnetic pole according to the sense of magnetization, the armature block 5 rocks, the closed magnetic circuit of the iron core 6 → armature 10 → permanent

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magnet 4 → iron core 6 is formed, and the stationary contact 23 to which the traveling contact 20 of one edge of the movable contact spring piece 17 is equivalent is contacted. If the energization to a coil 32 is stopped in this condition, it will return to the original condition by the return force of the elastic support piece 18.

[0013] In addition, bistability actuation is obtained when the location of the base of the elastic support piece 18 is not being deflected from a core.

[0014]

[Problem(s) to be Solved by the Invention] By the way, although the iron core 6 of the coil block 3 was formed in the shape of a KO character as shown in drawing 7, and it formed the flange 8 in those both-sides pieces 6a and 6a with simultaneous shaping, respectively as shown in drawing 8, there was a limitation in making thickness a of this flange 8 thin. That is, if the direction of the ** form resistance force of the flange 8 and shaping metal mold which were fabricated at the time of the ** form of shaping becomes larger than the holding power to side piece 6a of the iron core 6 of a flange 8. Since it was pulled in the direction of an arrow head and the clearance b by exfoliation was generated between side piece 6a of an iron core 6, and a flange 8 as a flange 8 shows drawing 9, there was a limitation in making thin thickness a of the flange 8 inside side piece 6a of an iron core 6, and making small holding power to side piece 6a of the iron core 6 of the flange 8 which is mold goods. Since coating is performed at the central piece of an iron core 6 in order to wind the direct coil 7 around an iron core 6, as shown especially in drawing 8, it becomes remarkable when slipping like fluororesin coating has good coating.

[0015] Succeeding in this invention in view of the above-mentioned trouble, the place made into the object prevents the flange formed in the both-sides piece of the iron core of a coil block with simultaneous shaping exfoliating at the time of a ** form, and is to offer the electromagnetic relay to which suction-force width of face can moreover be made to increase.

[0016]

[Means for Solving the Problem] The coil block which this invention formed the flange made of resin by simultaneous shaping in the both-sides piece of a KO character-like iron core, and looped the iron core between flanges around the coil in order to attain the above-mentioned object, The permanent magnet which magnetized so that a central polarity might differ from the polarity of ends, and contacted the pole face of the ends of an exposure **** iron core from the end face of both the flanges of a coil block of ends, In the electromagnetic relay equipped with the armature which is supported by the center-section top face of a permanent magnet free [a splash], and

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carries out seesaw actuation in the direction of ends of a permanent magnet The slot for exfoliation prevention is formed in the opposed face of the both-sides piece which is the point section of the both-sides piece to which this cross section became large, and is laid under the flange using an iron core with the variant cross section which made larger than the cross section of other parts the cross section of the point section of the both-sides piece which includes the pole face as an iron core of the above-mentioned coil block.

[0017]

[Function] Since the slot for exfoliation prevention was formed in the opposed face of the both-sides piece of the iron core laid under the flange according to the configuration of this invention It can prevent that the holding power between a flange and an iron core becomes large by the slot for exfoliation prevention, therefore a flange exfoliates from the side piece of an iron core at the time of a ** form. Therefore, the volume width of face of the coil which makes thin the flange inside the side piece of an iron core, and is wound around the iron core between the flanges of both sides can be increased. And since the iron core with the variant cross section which made larger than the cross section of other parts the cross section of the point section of the both-sides piece which includes the pole face as an iron core was used Since the magnetic-path cross section does not decrease even if the area of an armature and the pole face which counters can become large, it can make suction-force width of face increase as a result and it forms the slot for the top exfoliation prevention, buildup of the above-mentioned suction-force width of face becomes effective, and the electromagnetic relay of high sensitivity can be realized.

[0018]

[Example] An example explains this invention below. Since it is the same as the structure and the basic target which show drawing 6 , the structure of the electromagnetic relay of this example is explained in full detail only about the configuration of the different coil block 3. as shown in drawing 1 as an iron core 6 of the coil block 3 of this example, the thing of the variant cross section where the apical surface made swelling of the point section of the both-sides pieces 6a and 6a used as the pole face carry out in the direction of outside in, and made that cross section large compared with other parts is used, and it is shown in the opposed face of the point sections 1 and 1 to which this cross section became large at drawing 2 -- as -- full [of side piece 6a] -- ** -- the cross-section [of V characters]-like slot 2 has been formed like.

[0019] Since it will enter in the molding material fang furrow 2 of a flange 8 if it ** and

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a flange 8 is formed in the both-sides pieces 6a and 6a of an iron core 6 with simultaneous shaping, the holding power between a flange 8 and side piece 6a of an iron core 6 becomes large from the direction of ** form resistance with a flange 8 and shaping metal mold, and a flange 8 does not exfoliate from side piece 6a of an iron core 6 at the time of a ** form. That is, a slot 2 turns into a slot of exfoliation prevention. By this example, suction-force width of face F between rated excitation suction-force RO in the breaking point of spring load curve I which affects the sensibility as an electromagnetic relay as the area of the pole face of an iron core 6 can be made to be able to increase, it accumulates, and the opposed face product S with an armature 10 can be made to increase, therefore it is shown in drawing 3, and deenergisation suction-force Ha can be enlarged here compared with the conventional example shown with a broken line.

[0020] However, if the above-mentioned opposed face product S is made to increase by regulation of the dimension of an electromagnetic relay beyond a certain value, in order that the volume width of face L of a coil 7 may decrease, as the suction-force width of face F is shown in drawing 4, it falls. So, at this invention, the suction-force width of face F is Max FMAX. By selecting the becoming opposed face product Sx, the suction-force width of face F is raised. In addition, Sy shows the opposed face product of the conventional example.

[0021] Moreover, since the volume width of face of a coil 7 can be increased and it does not decrease by existence of the magnetic-path cross-section fang furrow 2 by making thin thickness a of the flange 8 inside side piece 6a since exfoliation of a flange 8 is lost as mentioned above, either, the suction-force width of face F can be made to increase in multiplication with the increment in the above-mentioned opposed face product S. **** 2 is good also by the die length which does not cover full [of side piece 6a of an iron core 6] as shown in drawing 5.

[0022]

[Effect of the Invention] Since this invention formed the slot for exfoliation prevention in the opposed face of the both-sides piece of the iron core laid under the flange Holding power between a flange and the both-sides piece of an iron core can be enlarged by the slot for exfoliation prevention. Therefore, the volume width of face of the coil which a flange does not exfoliate from the side piece of an iron core at the time of a ** form, makes thin the flange inside the side piece of a result iron core, and is wound around the iron core between the flanges of both sides can be increased. And since the iron core with the variant cross section which made larger than the cross section of other parts the cross section of the point section of the both-sides

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piece which includes the pole face as an iron core of a coil block was used. Even if the area of an armature and the pole face which counters can become large, it can make suction-force width of face increase as a result and it forms the slot for the top exfoliation prevention, in order that the magnetic-path cross section may not decrease, buildup of the above-mentioned suction-force width of face becomes effective, and the effectiveness that the electromagnetic relay of high sensitivity is realizable is done so.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline sectional view of a coil block of one example of this invention.

[Drawing 2] It is the perspective view of an iron core same as the above.

[Drawing 3] It is the related explanatory view of suction-force width of face same as the above and a spring load curve.

[Drawing 4] It is the related explanatory view of the opposed face product of the pole face same as the above and an armature, and suction-force width of face.

[Drawing 5] some iron cores of another example of this invention -- it is an abbreviation **** perspective view.

[Drawing 6] It is the decomposition perspective view of the electromagnetic relay of a seesaw actuation mold.

[Drawing 7] It is the perspective view of the iron core of the conventional example.

[Drawing 8] It is the outline sectional view of a coil block same as the above.

[Drawing 9] It is the explanatory view of a trouble same as the above.

[Description of Notations]

1 Point Section

2 Slot

3 Coil Block

6 Iron Core

6a Side piece

7 Coil

8 Flange

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(71)出願人 000005832

松下電工株式会社

大阪府門真市大字門真1048番地

(72)発明者 堀 正美

大阪府門真市大字門真1048番地松下電工株式会社内

(72)発明者 梶 紀公

大阪府門真市大字門真1048番地松下電工株式会社内

(72)発明者 橋本 健

大阪府門真市大字門真1048番地松下電工株式会社内

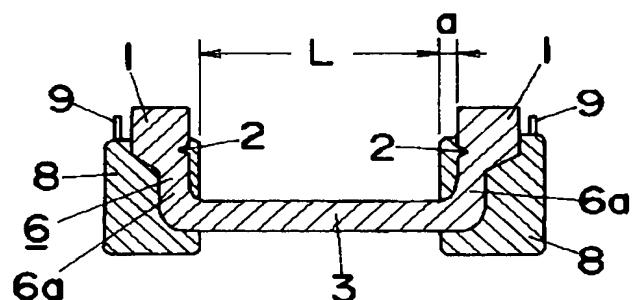
(74)代理人 弁理士 石田 長七 (外2名)

(54)【発明の名称】 電磁継電器

(57)【要約】

【目的】コイルブロックの鉄芯の両側片に同時成形により形成する鍔部の離形時の剥離を防止することができ、しかも吸引力幅を増加させることができる電磁継電器を提供するにある。

【構成】コイルブロック3の鉄芯6の両側片6a、6aは先部1の断面積を他の部分の断面積よりも大きくし、その先部1の対向面には断面V字状の溝2を形成している。この溝2は同時成形により鍔部8を形成したときに成形材料が入り込み、鍔部8と成形金型との離形抵抗力より、鍔部8と鉄芯6の側片6aとの間の保持力を大きくするもので、離形時に鍔部8が鉄芯6の側片6aより剥離するのを防ぐ。



1	先部
2	溝
3	コイルブロック
6	鉄芯
6a	側片
7	コイル
8	鍔部

【特許請求の範囲】

【請求項1】コ字状の鉄芯の両側片に同時成形による樹脂製の鍔部を形成し、鍔部間の鉄芯にコイルを巻装したコイルブロックと、中央の極性と両端の極性とが異なるように着磁し、両端をコイルブロックの両鍔部の端面より露出せる鉄芯の両端の磁極面に当接した永久磁石と、永久磁石の中央部上面に揺動自在に支持されて永久磁石の両端方向にシーソ動作する接極子とを備えた電磁継電器において、上記コイルブロックの鉄芯として磁極面を含む両側片の先部の断面積をその他の部分の断面積よりも広くした異形断面を持つ鉄芯を用い、この断面積が広くなった両側片の先部であって且つ鍔部に埋設される両側片の対向面に剥離防止用の溝を形成して成ることを特徴とする電磁継電器。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、接極子がシーソ動作する電磁継電器に関する。

【0002】

【従来の技術】図6は接極子がシーソ動作する電磁継電器の一例を示す、この電磁継電器はケーシングを上方に開放された箱状のベース11と、下方に開放された箱状であってベース11の上方からベース11の側壁の外側を覆う形で被嵌されるカバー12とから構成されている。

【0003】ベース11は樹脂成形品からなるもので、巾方向の両側壁にはその長手方向の中央部において上方およびベース11の内外に開放された凹所13がそれぞれ形成してある。各凹所13の底面にはベース11に同時成形された共通端子21の一端21aが露設している。共通端子21はベース11の両側壁の外側に露出して他端をベース11の下方に突出させている。

【0004】ベース11の内側の四隅には上端がベース11の上面よりも下方に位置するリブ14がそれぞれ形成されている。リブ14の上面にはベース11に同時成形された固定接点端子24の上端に設けている固定接点23が露設しており、固定接点端子24はベース11の両側壁の外側に露出して他端をベース11の下方に突出させている。

【0005】ベース11の両端壁には上方およびベース11の内外に開放された切欠部15が形成されており、各切欠部15の底面からはベース11に同時成形された一対のコイル接続端子22の一端22aが上方に向かって突設してある。コイル接続端子22はベース11の両側壁の外側に露出して他端をベース11の下方に突出させている。

【0006】ベース11とカバー12とにより形成されたケーシング内にはコイルブロック3と、永久磁石4と、接極子ブロック5とが配設されている。コイルブロック3は上方に開放された略コ字形の鉄芯6の横片にコ

イル7が巻装されるとともに、コ字型の鉄芯6の両側片6a、6aは図8に示すように同時成形により絶縁性合成樹脂材料で形成された鍔部8に覆われ鍔部8の周面の一所から磁極面を構成する先端部が露出した形状に形成されている。コイル7に接続されたコイル端子9は各鍔部8に対応してそれぞれ一対設けられ、鍔部8の上端よりも上方に突出するとともに上記コイル接続端子22の一端22aに当接するように折曲されている。

【0007】コイルブロック3がベース11内に収納された状態でコイル端子9とコイル接続端子22とは溶接結合、あるいは半田結合などの方法で電気的および機械的に結合される。鉄芯6の両端の磁極面の間には上記永久磁石4が磁極を当接させる形で配置されている。永久磁石4は板状のもので、コイルブロック3に対しては接着等で固定され、両端部はそれぞれ同極に着磁され、中央部が異なる磁極に着磁されている。すなわち、両端部がN極であれば、中央部はS極となるように着磁されているのである。

【0008】接極子ブロック5は略矩形の平板状に形成された磁性体製の接極子10と、接極子10の中央部の巾方向に渡って形成された成形部16と、この成形部16に同時成形により、接極子10の側面に並行するように配置された可動接触ばね片17と、可動接触ばね片17に一体となり、成形部16に同時成形された弾性支持片18とから構成されている。

【0009】可動接触ばね片17は中央部が上記成形部16に同時成形され、接極子10の両端方向に他端を延長した細長い導電性の板ばねからなり、中央部にはヒンジバネとなる弾性支持片18を一体に形成している。自由端となる他端にはスリット19を形成して二股状として固定接点23と対応する可動接点20を形成している。

【0010】接極子ブロック5は弾性支持片18をベース11の側壁に設けた凹所13に嵌合させて、共通端子21の一端21aに溶接固定され、また下面中央に設けた支点部を永久磁石4の中央部上面に回動自在に載せて揺動自在に支持され、ベース11内に配設される。以上のようにして、ベース11内にコイルブロック3と永久磁石4と接極子ブロック5とが収納された状態でベース11にはカバー12が被嵌される。

【0011】ここで上記弾性支持片18の成形部16に対する基部は接極子ブロック5の長手方向の中心部より偏倚しているため、弾性支持片18のばね力が永久磁石4による接極子10を鉄芯6の磁極面に吸着させる起磁力より大きくすることによって永久磁石4による接極子10と鉄芯6の磁極面との間の吸着力に抗して接極子ブロック5を一定状態に復帰回動させることができる。従って図示する例では単安定動作する有極型電磁継電器を構成している。

【0012】以上の構成により、通常は上記弾性支持片

18の偏倚と反対側の接極子10の端部が永久磁石4に吸着された状態で安定し、この吸着を打ち消す方向にコイル7を励磁すれば、磁化の向きに応じて接極子10の他端部が磁極に吸引されて接極子ブロック5が揺動し、鉄芯6→接極子10→永久磁石4→鉄芯6の閉磁路が形成され、可動接触ばね片17の一方の端部の可動接点20が対応する固定接点23に接触するのである。この状態でコイル32への通電を停止すると、弾性支持片18の復帰力で元の状態に戻るのである。

【0013】尚弾性支持片18の基部の位置を中心部より偏倚させていない場合には、双安定動作が得られる。

【0014】

【発明が解決しようとする課題】ところでコイルブロック3の鉄芯6は図7に示すようにコ字状に形成されたもので、その両側片6a、6aに夫々同時成形により図8に示すように鍔部8を形成しているが、この鍔部8の厚みaを薄くするには限界があった。つまり成形の離形時に成形された鍔部8と成形金型との離形抵抗力の方が、鍔部8の鉄芯6の側片6aへの保持力より大きくなると、鍔部8が図9に示すように矢印方向に引っ張られて鉄芯6の側片6aと鍔部8との間に剥離による隙間bが生じるため、鉄芯6の側片6aの内側の鍔部8の厚みaを薄くして成形品である鍔部8の鉄芯6の側片6aへの保持力を小さくすることには限界があった。特に図8に示すように鉄芯6に直接コイル7を巻回すため、鉄芯6の中央片にコーティングを施されることから、コーティングが弗素樹脂コーティングのような滑りの良い場合には顕著となる。

【0015】本発明は上述の問題点に鑑みて為されたもので、その目的とするところはコイルブロックの鉄芯の両側片に同時成形により形成する鍔部が離形時に剥離するのを防ぎ、しかも吸引力幅を増加させることができる電磁継電器を提供するにある。

【0016】

【課題を解決するための手段】上述の目的を達成するために、本発明は、コ字状の鉄芯の両側片に同時成形による樹脂製の鍔部を形成し、鍔部間の鉄芯にコイルを巻装したコイルブロックと、中央の極性と両端の極性とが異なるように着磁し、両端をコイルブロックの両鍔部の端面より露出せる鉄芯の両端の磁極面に当接した永久磁石と、永久磁石の中央部上面に揺動自在に支持されて永久磁石の両端方向にシーソ動作する接極子とを備えた電磁継電器において、上記コイルブロックの鉄芯として磁極面を含む両側片の先部の断面積をその他の部分の断面積よりも広くした異形断面を持つ鉄芯を用い、この断面積が広くなった両側片の先部であって且つ鍔部に埋設される両側片の対向面に剥離防止用の溝を形成したものである。

【0017】

【作用】本発明の構成によれば、鍔部に埋設される鉄芯の両側片の対向面に剥離防止用の溝を形成したので、剥離防止用の溝によって鍔部と鉄芯との間の保持力が大きくなり、そのため離形時に鍔部が鉄芯の側片より剥離するのを防止することができ、そのため鉄芯の側片の内側の鍔部を薄くして両側の鍔部間の鉄芯に巻回するコイルの巻き幅を増大させることができ、しかも鉄芯として磁極面を含む両側片の先部の断面積をその他の部分の断面積よりも広くした異形断面を持つ鉄芯を用いたので、接極子と対向する磁極面の面積が大きくなり、その結果吸引力幅を増加させることができ、その上剥離防止用の溝を形成しても磁路断面積が減少しないため、上記の吸引力幅の増大が有効となって、高感度の電磁継電器を実現できる。

【0018】

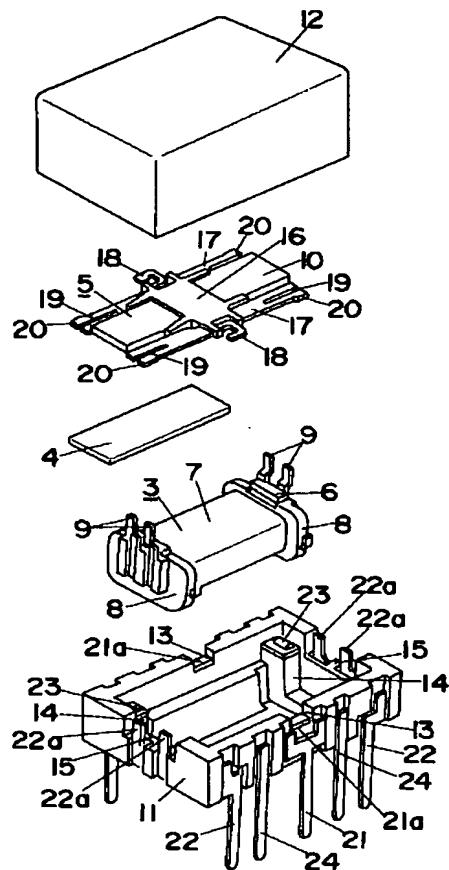
【実施例】以下本発明を実施例により説明する。本実施例の電磁継電器の構造は図6に示す構造と基本的に同じであるため、相違するコイルブロック3の構成のみについて詳説する。本実施例のコイルブロック3の鉄芯6として図1に示すように先端面が磁極面となる両側片6a、6aの先部を外方向に膨出させてその断面積を他の部分に比べて広くした異形断面のものを使用し、この断面積が広くなった先部1、1の対向面に図2に示すように側片6aの全幅に亘るように断面V字状の溝2を設けてある。

【0019】而して鉄芯6の両側片6a、6aに同時成形により鍔部8を形成すると鍔部8の成形材料が溝2内に入り込むため、鍔部8と成形金型との離形抵抗力より、鍔部8と鉄芯6の側片6aとの間の保持力が大きくなり、離形時に鍔部8が鉄芯6の側片6aより剥離することがない。つまり溝2が剥離防止の溝となる。ここで本実施例では鉄芯6の磁極面の面積を増加させため、接極子10との対向面積Sを増加させることができ、そのため図3に示すように電磁継電器としての感度に影響を与えるばね負荷曲線イの折れ点における定格励磁吸引力F₀と、無励磁吸引力F₀との間の吸引力幅Fを、破線で示す従来例に比べて大きくすることができる。

【0020】但し電磁継電器の外形寸法の規制によりある値以上に上記対向面積Sを増加させるとコイル7の巻き幅Lが減少するため、吸引力幅Fも図4に示すように低下してくる。そこで本発明では吸引力幅Fが最大F_{max}となる対向面積S_xを選定することにより、吸引力幅Fを向上させている。尚S_yは従来例の対向面積を示す。

【0021】また上述のように鍔部8の剥離が無くなるため、側片6aより内側の鍔部8の厚さaを薄くすることにより、コイル7の巻き幅を増大させることができ、また磁路断面積が溝2の存在によっても減少しないため、上記の対向面積Sの増加とともに相乗的に吸引力幅Fを増加させることができる。尚溝2は図5に示すよう

【図6】



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